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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/563,941

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Elena Costa

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STAAS & HALSEY LLP

SUITE 700

1201 NEW YORK AVENUE, N.W.

WASHINGTON, DC 20005

EXAMINER

AJIBADE AKONAI, OLUMIDE

ART UNIT

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2617

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/563,941	<b>Applicant(s)</b> COSTA ET AL.	
	<b>Examiner</b> OLUMIDE T. AJIBADE AKONAI	<b>Art Unit</b> 2617	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 May 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17, 18, 21-28, 30 and 32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30 and 32 is/are allowed.
- 6) ☒ Claim(s) 17, 18, 21-26 and 28 is/are rejected.
- 7) ☒ Claim(s) 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/09/2009, 1/28/2010</u>                                     | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see remarks, filed May 7, 2010, and May 11, 2010, with respect to the rejection(s) of claim(s) 17, 18, 21-25 and 28 under obvious double patenting have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art references.

### ***Allowable Subject Matter***

2. Claims 30 and 32 are allowable for the reasons indicated in the office action mailed April 3, 2009.

The indicated allowability of claim 26 is withdrawn in view of the newly discovered reference(s) to applicants' admitted prior art. Rejections based on the newly cited reference(s) follow.

Claim 27 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Double Patenting***

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

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1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 17, 18, 21-26 and 28 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S.

Patent No. 7,328,034 in view of **Applicants' Admitted Prior Art (hereinafter AAPA)** and **Soderkvist et al 6,771,628 (hereinafter Soderkvist)**.

<b><u>Claim 1 of U.S. Patent 7,328,034</u></b>	<b><u>Claim 17 of Instant Application 10/563,941</u></b>
<b>Claim 1</b> recites a method for synchronizing a radio communication system divided into radio cells, comprising:	Claim 17 discloses a method for synchronizing a radio communication system divided into radio cells
transmitting data using a multiple access method, each radio cell having a base station for providing radio coverage to a plurality of mobile stations assigned to the radio cell and the base station;	transmitting data using a multiple access methods, each radio cell having a base station for radio provisioning mobile stations assigned to the radio cell, comprising:
selecting a pilot channel at each base station and transmitting the pilot signal to the mobile stations assigned to the base stations;	receiving at the mobile station of the radio cell, base station signals of the radio cell and adjacent radio cells
transmitting the received pilot signal to the base station from the mobile stations assigned to the base	receiving at the base station of a radio cell, mobile station signals of the radio cell and adjacent radio cells

stations, in an uplink transmission; receiving at the base station pilot signals from the mobile stations assigned to the base stations and pilot signals assigned to adjacent radio cells;	
and using the pilot signals received to determine a synchronization value for a time synchronization and/or a frequency synchronization, to which the base station synchronizes itself.	determining, from the mobile station signals received at the base station, a first synchronizing value for at least one of time synchronizing and frequency synchronizing, to which the base station synchronizes itself
<b>Claim 2:</b> the method according to claim 1 wherein at least one of the mobile stations receives pilot signal from the base station to which the mobile station is assigned and receives pilot signals from base stations of adjacent radio cells, and	receiving at the mobile station of the radio cell, base station signals of the radio cell and adjacent radio cells
the mobile station uses the received pilot signals to determine a synchronization value for time synchronization and/or frequency synchronization, to which the mobile station synchronizes itself.	determining from the base station signals received at the mobile station, a second synchronizing value for at least one of time synchronizing and frequency synchronizing.

Claims 1 and 2 of U.S. Patent 7,328,034 does not disclose employing timeslots of commonly assigned carrier frequencies as radio transmission resources, wherein at least two adjacent base stations simultaneously and jointly employ a timeslot of a carrier frequency for radio provisioning a respectively assigned mobile station.

However, the AAPA discloses employing timeslots of commonly assigned carrier frequencies as radio transmission resources, wherein at least two adjacent base

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stations simultaneously and jointly employ a timeslot of a carrier frequency for radio provisioning a respectively assigned mobile station (see page 2, of the disclosure, in applicants' specification, paragraphs [0009]-[0011]; a communication system with frequency reuse factor of one so that all radio cells employ the same carrier frequencies, and the use OFDM radio communication for providing radio communication to a mobile station).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the AAPA into claims 1 and 2 of U.S. Patent 7,328,034 by employing a communication system utilizing a frequency reuse factor of one, and also employing OFDM for the benefit of increasing the data rate and conserving resources in a wireless network.

Claims 1 and 2 of U.S. Patent 7,328,034 as modified by the teaching of the AAPA does not disclose selecting the timeslot from the commonly assigned radio transmission resources taking account of an interference situation in the timeslot.

Soderkvist however, discloses in a wireless network selecting a timeslot for radio transmission by taking into account an interference situation of the timeslot (determining an interference level of a signal over a time slot and selecting the time slot for a call connection if the interference level in the time slot is below a predetermined threshold, see fig. 2, col. 3, lines 24-29 and 65-67, col. 4, lines 1-21).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine teaching of Soderkvist into the system of into claims 1 and 2 of U.S. patent number 7,328,034 by selecting a time slot for provision of radio

communication based on interference information associated with the time slot for the benefit of providing improved communication quality among mobile stations in adjacent/adjoining cells.

<b><u>Claim 18 of U.S. Patent 7,328,034</u></b>	<b><u>Claim 28 of Instant Application 10/563,941</u></b>
<b>Claim 18</b> recites base station assigned to a radio cell for synchronizing a radio communication system divided into radio cells, comprising: transmission means for transmitting data using multiple access method, the data being transmitted to a plurality of mobile stations assigned to the radio cell of the base station	Claim 28 discloses a base station in a radio cell of a radio communication system divided into radio cells transmitting data using multiple access methods, for radio provisioning mobile stations assigned to the radio cell, comprising:
receiving at the base station pilot signals from the mobile stations assigned to the base stations and pilot signals assigned to adjacent radio cells;	a receiver receiving signals of the radio cell and adjacent cells
synchronization means to synchronize the base station using pilot signals received and a determined time synchronization and/or frequency synchronization value.	a processor determining from the mobile station signals, a synchronizing value for at least one of time synchronizing and frequency synchronizing to which said base station synchronizes itself.

Claim 18 of U.S. Patent 7,328,034 does not disclose and utilizing timeslots of jointly assigned frequencies of an adjacent base station as radio transmission resources wherein the base station and the adjacent base station simultaneously and jointly employ a timeslot of a carrier frequency for radio provisioning a respectively assigned mobile station.

However, the AAPA discloses employing timeslots of commonly assigned carrier frequencies as radio transmission resources, wherein at least two adjacent base stations simultaneously and jointly employ a timeslot of a carrier frequency for radio provisioning a respectively assigned mobile station (see page 2, of the disclosure, in applicants' specification, paragraphs [0009]-[0011]; a communication system with frequency reuse factor of one so that all radio cells employ the same carrier frequencies, and the use OFDM radio communication for providing radio communication to a mobile station).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of the AAPA into claims 1 and 2 of U.S. Patent 7,328,034 by employing a communication system utilizing a frequency reuse factor of one, and also employing OFDM for the benefit of increasing the data rate and conserving resources in a wireless network.

Claim 18 of U.S. Patent 7,328,034 as modified by the teaching of the AAPA does not disclose selecting the timeslot from the commonly assigned radio transmission resources taking account of an interference situation in the timeslot.

Soderkvist however, discloses in a wireless network selecting a timeslot for radio transmission by taking into account an interference situation of the timeslot (determining an interference level of a signal over a time slot and selecting the time slot for a call connection if the interference level in the time slot is below a predetermined threshold, see fig. 2, col. 3, lines 24-29 and 65-67, col. 4, lines 1-21).



It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine teaching of Soderkvist into the system of into claims 18 of U.S. patent number 7,328,034 by selecting a time slot for provision of radio communication based on interference information associated with the time slot for the benefit of providing improved communication quality among mobile stations in adjacent/adjoining cells.

Regarding **claim 18** as applied to claim 17, the AAPA further discloses wherein the adjacent base stations employ radio transmission resources from a stock commonly assigned to the base stations for data transmission (see page 2, of the disclosure, in applicants' specification, paragraphs [0009]-[0011]; a communication system with frequency reuse factor of one so that all radio cells employ the same carrier frequencies, and the use OFDM radio communication for providing radio communication to a mobile station).

Regarding **claim 21** as applied to claim 17, AAPA further discloses synchronizing by at least one of the base station and mobile by adjusting carrier frequencies and timeslot-transmitting instants (see page 2, of the disclosure, in applicants' specification, paragraphs [0012]-[0013]).

Regarding **claim 22** as applied to claim 21, Soderkvist further discloses reducing co-channel interference on at least on of the base station and mobile station by interference suppression methods (determining an interference level of a signal over a time slot and selecting the time slot for a call connection if the interference level in the

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time slot is below a predetermined threshold, see fig. 2, col. 3, lines 24-29 and 65-67, col. 4, lines 1-21).

Regarding **claim 23** as applied to claim 22 Soderkvist further discloses assigning radio transmission resources on the base station side to minimize co-channel interference in adjacent radio cells (determining an interference level of a signal over a time slot and selecting the time slot for a call connection if the interference level in the time slot is below a predetermined threshold, therefore reducing co-channel interference, see fig. 2, col. 1, lines 54-58, col. 3, lines 24-29 and 65-67, col. 4, lines 1-21).

Regarding **claim 24** as applied to claim 23 AAPA further discloses wherein an orthogonal frequency division multiplexing method is employed (see page 2, of the disclosure, in applicants' specification, paragraphs [0009]-[0011]; a communication system with frequency reuse factor of one so that all radio cells employ the same carrier frequencies, and the use OFDM radio communication for providing radio communication to a mobile station).

Regarding **claim 25** as applied to claim 23 AAPA further discloses wherein one of a time-division duplex and frequency-division duplex method is employed (see page 2, of the disclosure, in applicants' specification, paragraphs [0009]-[0011]).

Regarding **claim 26** as applied to claim 24 AAPA further discloses determining one of a time deviation through correlating and a frequency deviation by ascertaining a phase rotation of consecutive symbols following a transformation into the frequency

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range (see page 2, of the disclosure, in applicants' specification, paragraphs [0011]-[0012]).

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLUMIDE T. AJIBADE AKONAI whose telephone number is (571)272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OA

/Charles N. Appiah/  
Supervisory Patent Examiner, Art Unit 2617